

AN  
ESSAY  
ON THE  
Transmutation of Blood;

Containing the

ÆTIOLOGY:

OR,

An Account of the immediate Cause  
of PUTRID-FEVERS or AGUES.

AS ALSO

OBSERVATIONS upon the noble Specifick,  
*CORTEX PERUVIANUS*.

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Ἡν ἐς τὴν κοιλίην αἷμα ἐκχυθῇ παρὰ φύσιν, ἀνάγκη ἐκπυηθῆναι.  
Hipp.

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THE  
PREFACE.



THE Honourable Mr. *Boyle* has given us the Natural History of human Blood of healthy Men, in order to serve for a Direction to any that wou'd write the History of morbid or depraved Blood in any particular Disease, as a Pleurisy, a Quartan Ague, the Dropsy, the Scurvy, &c. and thought it an Omission that so im-  
portant



portant a Subject had not been more skilfully and industriously enquir'd into.

The most considerable real Discoveries that have been lately made, have been in Anatomy, rather than in the Humors, and Spirit and Blood, which are the principal Seat of Health as well as Disease: And for want of improving our Knowledge of the Nature of the Blood, gave Occasion of many Errors in our Reasoning about the Effect of Medicines which they produce in our Bodies.

Therefore how necessary it is for a Physician to know the Nature of human Blood, as well as the Anatomy of the solid Parts, since all Distempers are owing to a Viti-  
 ation of the Quantity, Quality, and irregular Motion of its Fluids, to a bad Disposition and Texture of their Channels.

Several



Several have suspected the Circulation of the Spirits \*, because the Spirits themselves are not visible, nor does any Ligature or Tumor in the Nerve discover their Motion. But in a more particular manner, Dr. *Cheyne*, in his *Essay on the Gout*, has demonstrated by Experiments, that the Muscles in Contraction sink into their own Substance, and that it is an extrinsick Principle, and not the animal Spirits, that were thought to be conveyed into the Body of the Muscles, to occasion an Inflation and Contraction in such Parts, by rarifying the Blood to expand it self, &c.

And he farther tells us, that the nervous Fibres are not pervious or

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\* Quid ergò miri, ligaturas, puncturas, sectiones nervorum non reddere sensilem hujus liquidi præsentiam, motumve? H. Boerhaave, p. 71. Instit.



hollow to receive any: Which is contrary to the Description of all our modern and most accurate Anatomists; but he supports his Argument with a Name of very great Authority, *Leeuwenhoek*, who has seen farther than most Men, by the help of his Glasses.

Others have suspected that the Blood doth not at any time putrefy both *extra* and *intra vasa* and seem inclin'd to believe that it has lost entirely its former Tendency to a coagulatory Separation such as in Chyle and Milk they have; in the spontaneous Separation or Curdling of which latter there is a Concurrence of a manifest Acid.

Some of our most eminent Physicians have given us an Account what Plants and chymical Medicines alter the Blood, as to coagulate or attenuate. But my Design here is



to shew how the Blood, of it self innoxious, by undue Retention is alter'd and become hostile, which ill Qualities are the proximate Causes of diverse Diseases, as a Pleurisy, Peripneumony, Putrid Fevers, and Agues.

In these the Humours, or Part of them, have so little circulatory Motion, that they fall into an intestine one, and putrefy. For, where-ever the Blood stagnates, it will be coagulated and corrupted, tho' the thing that caus'd the Stagnation were not the immediate Cause of the Coagulation and Corruption.

It is very difficult to follow Nature in her most secret Elaborations, but the divine *Hippocrates*, by just Observations, has trac'd her Footsteps, and found the Origin and Cause of every Change. So that we are not a little oblig'd to

him, and *Galen* his best Interpreter, and others; tho' a late Author makes 'em to be of little Worth having barely given us a Narrative of Facts or Incidents. Undoubtedly they have laid a good Foundation to ground our Theories, for we are to square our Reasonings to Facts; for where Fact appears Reason falls to the Ground.

This was *Aristotle's* Fault; for having fram'd a Body of Physics out of his own Head, was for condemning all that was not consonant to his own Principles; out of no other Motive, but because they were not agreeable with the Foundations himself had laid: So that all the various Phænomena of Nature were to be suited to his Philosophy, instead of his Philosophy being drawn from Observations in Nature.



Dr. *James Keill* well observ'd,  
 that “ Phyſick ſeems in nothing ſo  
 “ defective, as in the Knowledge  
 “ of the Nature of the Blood :  
 “ And that our Indications are true  
 “ and juſt, ſo far as our Know-  
 “ ledge of the animal OEconomy  
 “ reaches ; but where it leaves us,  
 “ we only grope in the dark, and  
 “ find out Remedies by chance.

“ But this will be ſtill more evi-  
 “ dent, if we conſider, there is no  
 “ Diſeaſe better known, or which  
 “ has its moſt minute Circum-  
 “ ſtances better deſcribed, than a  
 “ Tertian Fever; yet becauſe we  
 “ are ignorant of the Nature of  
 “ the Blood, which is the Seat of  
 “ the Diſeaſe, its Hiſtory doth not  
 “ help us to any Indication, which  
 “ if answer'd will work a Cure ;  
 “ but we are obliged to the igno-  
 “ rant *Indians* for our Knowledge  
 “ in curing this Diſeaſe.”



To enumerate the various Opinions of Authors concerning the Bark, is endless, and to little purpose. For altho' it has been made use of with wonderful Success, in intermitting Fevers, and other Diseases, yet being ignorant of the Nature of the Blood, which is the Seat of the Disease, it always operated by an occult Quality.

Thus when we cannot readily account for Operations in Nature, particularly the sudden Effects of this Medicine, we fly to *Materia Subtilis*, and content our selves with occult Quality; but at this time being let into the Secret of the Transmutation of Blood, the Operation of the noble Specifick *Cortex Peruvianus* will be no longer a Mystery: And a great many Difficulties about the Causes of Diseases, and the Manner of the Operation of Medicines vanish.



If this little Tract will set others upon improving the small Knowledge we have of human Blood, I shall have my Aim; for I am none of those whose Genius are confin'd within the narrow Limits of Things already known, and whose self Sufficiency sooths 'em with a *ne plus ultra*.



1844  
The first of the year was a very  
cold one, and the weather was  
very disagreeable. The snow  
was very deep, and the wind  
was very strong.

The second of the year was a  
very warm one, and the weather  
was very pleasant. The snow  
was very shallow, and the wind  
was very light.

The third of the year was a  
very cold one, and the weather  
was very disagreeable. The snow  
was very deep, and the wind  
was very strong.

The fourth of the year was a  
very warm one, and the weather  
was very pleasant. The snow  
was very shallow, and the wind  
was very light.

The fifth of the year was a  
very cold one, and the weather  
was very disagreeable. The snow  
was very deep, and the wind  
was very strong.

The sixth of the year was a  
very warm one, and the weather  
was very pleasant. The snow  
was very shallow, and the wind  
was very light.





# AN ESSAY

ON THE

Transmutation of Blood, &c.

**T**HE Transmutation of Blood will cause me to run back to Chylification and Sanguification. Chyle is made out of our Aliments by the Contractions and Attritions of the Stomach. These being reduced into a Fluor, and intimately mix'd with the Liquids of the Drink, and Juices of the Stomach, compose that lactescent Liquor, which is called Chyle, a Word originated from  $\chi\upsilon\lambda\epsilon\iota\nu$  to dissolve: Con-  
C sequently



*Solutio est  
principium  
transmuta-  
tionis.*

sequently it is only a Dissolution and Coæquation of Animals and Vegetables which consist of the same Principles that is, of oily or sulphurous, and aqueous Parts incorporated together with the saline, by the Structure and intense Heat of the Mechanism; and the Assistance of the saline Parts dividing the oily and lessening their Cohesions with one another, makes it miscible and readily join.

That these are the predominant Principles that constitute the Blood of Animals, are evident: For of whatsoever every thing consists, of the same it must be made. Of Chyle Blood is afterwards composed, and in Women that give the<sup>a</sup> Milk more immediately. Moreover when either Chyle or Milk are examined by the Microscope, they appear like Blood to consist of very small<sup>b</sup> Globules, swimming in a limpid Fluid.

<sup>a</sup> Quòd lac non fiat ex sanguine, sed ex chylo. Vid Petr. Guiffart. Exercit. med. De proxima Lactis materia.

<sup>b</sup> Chylus est fluidum ex globulis diaphanis, per liquorem crystallinum agitatissimum --- & Pingues chyli particulae in bullulas sive vesiculas ab aeris Atomis reducuntur. Bohnius.



By Sanguification is generally understood the Assimilation of <sup>c</sup> Chyle into Blood, which is performed by Attrition of the Arteries thereupon, and changing the Figure of the chylous Particles, so that by the several Motions as well intestine as progressive there is made such an intimate Mixture of Parts, which is supposed to be compleat, when the whole circulating Mass is saturated with a high red Colour, and upon Phlebotomy separates in the Bason into two different Parts; A red Crassamentum and an Amber colour'd Serum only, without any white Matter floating loose on the Surface, as Chyle before perfect Assimilation will do.

When the Blood is thus constituted we find by the chymical Analysis of it, the constituent Principles of all natural Bodies, *viz.* Earth, Salt, Spirit, Phlegm, and Oil, which are producible and destructible, and are manifestly transmutable into one another.

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<sup>c</sup> Chylus per intestina in venas lacteas compressione propulsus, ex Chylo fit Chymus: id est liquor pinguis, oleosus mollis. Unde mores sanguinei. G. Horn.

*Sal commune est  
basis omnium  
aliorum  
salium.*

The saline Particles that are taken with our necessary Nourishment are the Original and Conservation of the Volatile; for the subtile Sulphur or Oil penetrating into the Pores of the fix Salt, closely knits it self with its Particles, and being of a subliming Nature that is derived from the igneous Minimum it contains, doth levitate, sublime and volatilize the said Salt.

Thus the saline and the oleous, or humid Substance, are render'd an Æthereal Fluid, and when thus conected and under this Modification, it becomes what animates those minute Threads or Fibres, and undoubtedly owe to it their Elasticity and motive Faculties, however convey'd, or through what Passage destined for that Purpose.

The Animal Spirits are defined to be a very thin Liquor, which distilling from the Blood in the outward and cortical Substance of the Brain, and thence through the Medullar Substance of the Brain, the Corpus callosum, and Medulla oblongata, thus it is carried thro' that intricate Secretion into the Nerves and thence derived into the Body of the Muscles to occasion an Inflation and Contraction in such Parts by rarifying



the Blood to expand it self. And it is by virtue of this same Fluid, are performed all the Actions of Sense and Motion.

There is nothing in Nature that can be supposed to bear a greater Similitude to the Animal Spirits, than vinous or ardent Spirits, for the immediate Effect that spiritous Liquors have upon the Nerves, by adding to their Springiness and Force of the Fibres, is a very great Reason of the near Cognation between the Fluids. And moreover, dephlegmated Spirit of human Blood (which is an urinous one) being shaken and thereby confounded with the same quantity of Spirit of Wine, it will permanently unite, notwithstanding that those two Liquors do belong even to differing Kingdoms, the one to the Animal, and the other to the Vegetable.

The Difficulty arises hence, that the Heat in Animal Bodies is not sufficient to subtilize and raise a Spirit, such as is produced by Distillation by the help of a Fire. And because we cannot obtain from human Blood an ardent Spirit, which is the usual product of Fermentation in Liquors, yet notwithstanding it is a combustible Body; but every one will

will not think it so inflammable as the indefatigable <sup>d</sup> Mr. *Boyle* upon Tryal purposely found it to be.

All sulphurous Bodies have their igneous Quality from their Acidity and corrosive Salts, as Phosphorus the most igneous, being only Sulphur and Salt in a Coagulum, which differs but in Rest, or in a lesser degree of Motion from actual Fire; for it doth continually emanate by Irradiation, or atomical Effluvia. And this being the Product of Urine, surely it must be true, and beyond Contradiction, that these Principles were pre-existent in the Blood.

The ingenious Mr. *Godfrey*, who has brought Phosphorus to so great a Perfection, can by his Chymical Legerdemain make vinous or ardent Spirits, which are liquid Sulphur, such a *Materia subtilis* (and not altogether by Distillation) that a Drop will not fall to the Ground.

Whether Nature, in her most secret Elaborations, takes such a peculiar Mixture and Method to subtilize some of the various Apporhea of the Body, or

<sup>d</sup> *Nat. Hist.* p. 31, 32, 33.



whether it be by Attrition and frequent Occursions, or both, is not at all material, since it is Matter of Fact, that animal Bodies do very much comminute and subtilize, *viz.* insensible Perspiration, and the volatile Salts that animal Substances plentifully yield by Distillation.

But whether the Nerves are pervious, or whether there be any such thing as animal Spirits, is not to my present Design : Yet since I treat of the Blood (that is the Fluid in the Veins and Arteries) which is the common Promptuary of all the other animal Fluids, because they are all Parts of the Blood separated from it by the Force of the Heart, and many of them by the same Force return to it again : And though my Design is not to treat of all the animal Fluids, yet cannot pass this by without Regard, it being supposed to be the Principal of Vitality, and chief Instrument of animal Action.

This Phænomenon will be set in a clearer Light by the following Observation, *viz.* When a Nerve is deprived of its Elasticity, either by an Obscission, Contusion, or Pressure of the ambient Vessels, there is an entire Loss of voluntary

tary Motion or Sense, or both in the Part, and attended with an Atrophy.

Therefore the Nerves are the Instruments of Sense and Motion, however or after what Manner they communicate that impress'd Motion to all the Parts of the Body. But if we consider that the whole Machine is a Composition of those minute Threads or Fibres, variously interwoven, and corresponding to one another ; it will appear very probable that they may instantaneously convey their Impressions in contrary Directions, rather than propagated by the Undulation of a Fluid : And seemeth rational to conclude, that Sense and Motion are performed by the Action of an extrin-

*In omni  
motu datur  
vis extrin-  
secus impel-  
lens.*

*For  
Nullum  
corpus à  
se ipso move-  
tur.*

sick Principle on solid Fibres. For when Emeticks or Opiates are taken into the Stomach, they no sooner act upon the nervous Fibres, but they transmit to the Brain such Motions as they receive : The Result of which is what we call Sense.

Hence we may gather, that whether it be an <sup>e</sup> extrinsic Principle, or whether it be a Fluid that is initiated *pro re*

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<sup>e</sup> Spiritus in cerebro moventur & determinantur ab objecto aliquo externo vel interno. G. Horn.  
*natâ*



*nata*, or according to the *Imperium Voluntatis*, (I shall here make use of the ingenious and learned <sup>f</sup> Doctor's own Words) " It is requisite to maintain the Elasticity of the Nerves, that there should be sent Nourishment duly concocted, and sufficiently subtilized (so as it may readily quite pass through all those small winding Channels to the last solid Fibres) to fill their empty Pores, to swell their Bulks, and thereby to lessen their Lengths, *i. e.* to stretch or wind them up."

So that the Nerves receive their Nutrition and Supply by Accretion, which is nearly of the same Sense with Augmentation, and is properly an addition of matter to any Body externally : I shall dwell no longer upon the nervous Subject, but keep to my Title-Page, *viz.* Transmutation of Blood, &c.

Having already given a short Account of the Composition and the immediate Matter of Blood, and how it is assimilated ; I shall endeavour in the Prosecution of this Enquiry, to shew how the Blood mutates into Pus : And not with-



out a Colour at least of Reason, that I shall dissent from an Opinion of some modern Authors, who will not allow that Blood alone can suppurate and be changed into Matter; and this I shall support by the following Arguments.

It is most likely from the Dissolution of Sulphur, that the red Colour or Tincture of the Blood doth arise: For sulphurous Bodies, before any others, impart to the solvent Menstruum, a Colour highly full of Redness. So that the whitish coloured Matter contained in Pimples, Wounds and Abscesses, proceeds only from the latent Acid that precipitates the Sulphur of the Blood, and changes its red Colour into a whitish one.

The red Colour of the Blood proceeding from the Resolution of the sulphurous acid Parts being set at Liberty, as that they may mix *per minima*, and make a subtile Effervescence with the subtile Alcaly, is at length so resolved as to manifest it self by tinging the whole Liquor: After the same manner, in the Tincture of Salt of Tartar, the Spirit of Wine (which is a liquid Sulphur) is ting'd by the volatiliz'd Alcaly of the Tartar.

And



And we find that common Sulphur  
 boil'd in the Lixivium of any fixt Salt,  
 is thereby exalted to a red Colour; but  
 because the Alcaline is so ty'd to the ter-  
 restrial Particles that it cannot penetrate  
 the Sulphur *per minima*, therefore the  
 Colour is obscure and dark. Now if  
 you pour another acid Liquor upon these  
 sanguine Tinctures, immediately they be-  
 come of a milk white - Colour. (And  
 this answers in natural as well as artifi-  
 cial Tinctures). Just so it happens when  
 the Blood is stagnated or extravasated  
 and putrefied in any Part of the Body.  
 The Operation of *Lac Sulphuris* may  
 give us an Idea of Chylification, Sanguifi-  
 cation and Putrefaction. For as Sulphur  
 becomes white in the Majistery, so Ali-  
 ment being attenuated in our Stomachs  
 is in part reduced into a Chyle of a  
 white Colour; and as the Sulphur when  
 entirely dissolved turns of a red Colour,  
 the Parts of the Chyle being ex-  
 tended and dissolved by repeated Circula-  
 tions become red and converted into  
 blood; which Blood in Apostems, turn-  
 ing into Pus, becomes white again by  
 reason of Acid assisting anew in that  
 operation.

*Vinum ru-  
brum infu-  
so Spirit.  
Vitrioli mo-  
mento al-  
bescit.*



For Proof of this Assertion, 'tis to be noted, that to all Bodies there concurs an Acid as a constitutive Principle or Vinculum, whereby the Alcaly is bound into a Body; for there is no Alcaly, but in its intime and central Particles contain a most acid, corroding and perforating Salt, therefore cannot be denied in the Blood. So that Pus is nothing but Blood stagnated and void of Motion, whereby every Principle begins to disengage (because that by that circulating Motion it was kept in that union Form) and acquiring an Acidity, for nothing which is continually moved grows sour; but such things only which upon Cessation of Motion stagnate or adhere. So that the Acidity that arises from the Putrefaction precipitates the Sulphur that ting'd the Blood, and thereby introduces that Change which is called Corruption: And this is done by destroying the Texture and Continuity, or separating Degree of Cohesion. For the different Forms of Bodies are nothing but the different Modification of the same Matter; and depend upon the various Magnitude, Figure, Texture, Position and other Modes of Particles composing Bodies.

*His modis  
omnis corporum  
alteratio & generatio  
perficitur.*



Thus the divine *Hippocrates*, who with the greatest Diligence and Industry observed the most minute Circumstances of Diseases, *Si in ventrem sanguis præternaturam effusus fuerit, eum suppurari est necesse.* If Blood, contrary to Nature, flow into any Cavity, it corrupts and suppurates of Necessity; which makes it plain that though the Blood be of an adequate Mixture, it is liable to this Change if extravasated, or out of the Force of Circulation.

And that incomparable Physician *Galen's* Opinion is very agreeable to this Aphorism; for he assigns no other Cause than Stagnation, and compareth the Putrefaction in the Veins and Arteries to that which is made in Abscesses. And

*Heurnius* distinguisheth Putrefaction of human Bodies, into that which is made of the grumous Part of the Blood, which is Pus purum, and that which is made of Serum or Ichor, and this he calls *Materia purulenta.*

*Sennertus* tells us, that in intermitting Fevers, at every Fit the Matter that causes it is consumed and cast off, and after new Matter is generated, which putrefying begets a new Fit, and so on from time



time to time. This whole Doctrine appears to me highly confirm'd, by so great an Authority, that there will be no room left to doubt.

*Fernelius, lib. 4. Pathol. cap. 6.* asserts, that some Parts of the Blood are capable of Putrefaction, and others not; and he gives an elegant Description how the putrescible Parts in Fevers attract one another, 'till at last those Particles capable of Putrefaction are putrefied, and then what is pure is separated from them altogether.

Nay most of the Antients were of Opinion, that some of the Humours were really capable of Putrefaction; and these appear in the Urine of Persons in a Crisis, and pass off by the Bladder and Pores of the Skin in critical Sweats, and so determine the Struggle between Nature and the Disease, by the Load extirpated.

We find that some modern Authors are of Opinion, that neither arterial nor venal Blood is capable of Putrefaction or Digestion into Pus. Neither do they think it agreeable to Reason to believe, that any of the Humours of the Blood are capable of Putrefaction; however, for Distinction they will allow some  
 Fevers



Fevers to be called putrid, and in these it is no other than the chylous Particles, which in the proper time appear as a νεφέλη, ἐναϊώρημα, and ὑπόστασις in the Urine. So that the Chyle, though well and naturally concocted, is impeached a Cause of the Fever; and when concocted and excerned along with the Urine, the Fever should in consequence decline and finally cease.

Dr. *Lister's* Comment upon the same Aphorism of *Hippocrates*, is as followeth, viz. *Verum in duplicatura peritonæi in ascitide ad centum & amplius libras incorruptus effusus est, & feliciter paracenthesi evacuatus. Vide Exercitationem nostram de Hydrope, alterâ impressione. Imò è vulnere imi ventris post mensem sanato, subitus dejectiones non sine animi deliquio, ad plures libras sanguinis atrii, & in pus nondum conversi, corrupti tamen & fætidissimi, ipse vidi: tamen ab iis dejectionibus optime convaleuit juvenis sauciatus. Igitur hic suppuratio latius sumenda est, pro omni statu sanguinis extravasati.*

To make good this Assertion here, in order to refel the Assertion of that divine Author, were very unreasonable, since to do it exactly (and without



without Exactness, it were no Demonstration) requireth a total Survey of Circumstances, *viz.* Whether the extravasated Serum or Crassamentum were not destitute of proper Heat in proportion to the Quantity extravasated, and how long detained, &c. And this with all the Succinctness we are able to explicate so knotty a Subject.

The famous Lithotomist Dr. *Cyprinus*, in his Epistle to Sir *Thomas Millington de Fœtu, &c.* endeavours likewise to make it appear that the Blood alone never mutates into Pus. And this he supports and strenuously maintains from Facts and Experience; but without doubt his Observations were not just and accurately taken, otherwise he might have found, that either the Crassamentum or Serum would mutate into Pus, without the Assistance of another Humour.

I shall not insert all his Observations, as being too tedious, and because he sums up the whole Matter as followeth, *viz. Pour donc qu'il se forme du pus, il est nécessaire qu'il S'extravase des humeurs, de diverse nature; qu'elle se mêlent, & se fermentant quelque peu ensemble de la vient que selon la diversité du mélange & des humeurs, il se forme diverses sortes*



tes du pus. Si l'on se ramasse des humeurs lymphatiques de diverse nature hors des vaisseaux, & qu'elles se mêlent, s'agriscent & fermentent ensemble il se forme un pus ichoreux : Si le sang est mêlé avec une autre humeur, on le appelle un pus sanious : mais pour qu'il se fasse un pus bon & loüable, il faut qu'il se fasse un mélange de la lymphe avec la graisse : si ces deux humeurs viennent à s'extra-vaser & à se mêler dans une certaine proportion, il se forme le plus souvent des abscez.

On remarque aussi que les parties qui abondent en ces humeurs sont plus sujettes à dez abscez ; ce qui se voit tous les jours dans les mammelles des femmes : car comme ces parties abondent en ces deux humeurs dont nous venons de parler qui sont nécessaires pour la generation du lait, elles sont aussi souvent attaquées d'abscez. C'est pour la même raison que les interstices des muscles sont les sieges ordinaires des abscez, &c.

Au contraire les parties qui n'abondent pas en ces humeurs, sçavoir en lymphe & en graisse, ne sont jamais sujettes abscez : tel est le corps charneux du muscle qu'on n'a jamais veu attaqué d'abscez in plein du pus.

“ Hence it's necessary that there should  
 “ be extravasated Humours of diverse  
 “ Nature that they may be mixed and fer-  
 “ mented together, whence proceeds  
 “ that according to the difference of Mix-  
 “ ture and Humours they form diffe-  
 “ rent sort of Matter. If lymphatick  
 “ Humours of diverse Nature be ex-  
 “ travasated, and if they mix, grow four,  
 “ and ferment together, they form an  
 “ ichorous Matter : If the Blood is mixed  
 “ with any other Humour, 'tis called a  
 “ *sanious Matter* : But when it forms  
 “ a good and laudable Matter, it must  
 “ make a Mixture of the Lymph with  
 “ Fatness; if these two Humours hap-  
 “ pen to be mixed in any certain pro-  
 “ portion, it is formed generally into  
 “ an Abscess.”

“ 'Tis observed also that the Parts  
 “ which abound in these Humours are  
 “ most subject to Abscesses; which is  
 “ seen every Day in Womens Breasts;  
 “ for as the Parts abound in these two  
 “ Humours whereof we are to treat  
 “ which are necessary for the Genera-  
 “ tion of Milk, they are often attack'd  
 “ with Abscesses. 'Tis for the same  
 “ Reason that the Interstices of the  
 “ Mus-



“ Muscles are the common Seats of  
 “ Abscesses, &c.”

“ On the contrary, those Parts which  
 “ don’t abound with these Humours,  
 “ that is Lymph and Fatness, they are  
 “ never subject to Abscesses : Such is  
 “ the fleshy Part of a Muscle which is  
 “ never attack’d with Abscesses or full  
 “ of Matter.”

In answer to his Observations we  
 rather find the contrary, for Womens *Glandulae*  
 Breasts are composed of a great Num- *potius in-*  
 ber of Glands, and consequently seldom *durantur*  
 suppurate and become Abscesses ; and it *quam in*  
 is obvious and past all doubt, that the Sub- *suppuratio-*  
 stances of the Muscles, or Flesh, are the *nem Abi-*  
 most proper Parts for generating and *unt. Ut*  
 better for forming Pus, than those Parts *videmus in*  
 that are membranous : Since Pus is no- *strumis.*  
 thing else than the Blood stagnated and  
 turned to this Appearance, and different  
 sorts of Pus are occasioned by the diffe-  
 rent Condition of the Blood, and the  
 various Degrees of Heat in the Part.

We don’t only find Pus among the  
 Membranes and Interstices of the Mus-  
 cles, for sometimes the whole Substance  
 of the Muscles are gone, and at other-  
 times as to discover a Sight as pleasant  
 as strange, *viz.* the Veins, Arteries,  
 D 2 Nerves,

Nerves, and Tendons, and in short all the large Vessels where the Blood circulates bare and untouched; but upon the Patient's Recovery all fills up as before with new Flesh.

And moreover we may sensibly observe in the very Part, that it gradually acquires new Qualities, it being at first red, and if wounded then distills Blood, which by lodging in the Part insensibly suppurates, and becomes what we call Pus; by which it is plain, it there assumes new Qualities that justly entitle it to new Denominations: So that we may conclude that those Parts which don't abound with these Humours, that is, Lymph and Fatness, such is the fleshy Part of a Muscle, is the most proper Part, and most subject to Abscesses.

*Quod Batrachion  
sive Ranulam  
vocant ad strumosis  
genus retulerunt.*

He elsewhere delivers it as a standing Maxim, that a Ganglion and Ranula never change into a purulent Matter, though they should remain extravasated a whole Year or more. And other Extravasations of Lymph, which never suppurate, *viz.* Artheroma, Steatoma, Meliceris. I must own that these are scarce ever cured, but by a manual Operation.

The Reverend Dr. *Hancock* in his *Febrifugum Magnum*, makes Water a Catho-



Catholicon in all inflammatory Cases whatsoever. And unless we shun the Method of *Acron-Agrigentinus*, who neglecting the Reasons of Things, contented himself with bare Experience ; we shall fall into great Mistakes by applying too universally in all Cases and Circumstances alike.

It will be a Digression here to make any Remarks touching the Benefit and Advantages of it in Fevers, &c. as being foreign to my present Design : But will readily concur with him or any other in Praise of Water as a Regimen or Diet, though now-a-Days instead of Water (which was the greatest Part of the Drink in the *Ante-diluvian* World, and very congenial to the Temper of Man) we drink the same Element impregnated with the Particles of the Grape, Barley, or Sulphur, which are very pernicious if commonly used, and especially to Excess ; for they destroy the *Calidum innatum*, prey upon the rosid Juice, change the natural Tone of the Stomach, the Texture of the Body and the Crasis of the Parts ; hence come Atrophies, the Imbecillity of our Nerves and Trepidation of our Members, &c.

This

This same Element in *Puris Naturalibus*, that is, not impregnated and saturated with other Bodies, will dilute the Blood and dissolve and carry off the saline Spicula, and by that Means remove and prevent most chronical Distempers and in short, will cause a good and perfect Concoction; so that a good Habit of Body will be establish'd, the Mass of Blood hath its pure Tincture, all the Apporhea of the Body have their peculiar Properties suitable to the intention of Nature.

I shall go no further with this Digression, but will take to Consideration what comes naturally under the Subject I treat, *viz.* The Doctor seems to wonder “ That Dr. *Sydenham* should in-  
 “ culcate the Notion of Concoction.  
 “ And Dr. *Pitcairne*, who in his *Ra-  
 “ tionale's* and other Theories has run  
 “ counter to many Physicians, yet re-  
 “ tains the Notion of Concoction.  
 “ And the Doctor believes, Physicians  
 “ have hardly been more mistaken in  
 “ any one thing, than this Notion of  
 “ Concoction, &c. except in Wounds,  
 “ Boils and Apostema's in the out Parts  
 “ which do concoct and become Pus.  
 “ And he thinks he may say, there nei-  
 “ ther



“ ther is, nor can be any such Con-  
 “ coction of the Febrifick Matter in  
 “ the Blood; for as it would totally  
 “ stop the Circulation, so it is impossi-  
 “ ble such Matter should ever get thro’  
 “ the Capillary Arteries, &c. so as to  
 “ be carried off either by insensible or  
 “ sensible Perspiration.”

I shall here in few Words remove  
 one and the only one Objection of  
 the Doctor against Concoction of the  
 Febrifick Matter in the Blood; for con-  
 ceding of Stagnation of Humours in  
 any one Part, doth not exclude, or im-  
 pede the Circulation of the Mass in  
 any other Part, but where the Stagna-  
 tion is; and finding a Resistance or Ex-  
 clusion, the circulating Blood doth pre-  
 terflow through the lateral Branches, or  
 next Passages that are patent.

Therefore rejecting all such Hypo-  
 theses and imaginary Theories, I shall  
 ground it upon the trite Maxim of  
 Physick, that Humours *extra vasa* pu-  
 trefy. This being granted, I hope they  
 will allow, that *intra vasa* when out of  
 the Force of Circulation will likewise  
 putrefy or suppurate, according to the  
 Dictates of *Galen*, &c. For those things  
 which are out of the Force of Circu-  
 lation,

lation, ought to be accounted out of the Animal, although they are within a living Body.

I think that there is no need of any further Demonstration, that the Blood doth putrefy both *extra* and *intra vasa*, but when? not immediately, as appears in most œdematous, schirrous, or aqueous Tumours, and many Ecchymosis not tending to Putrefaction before a long interval of Time; tho' in some Cases, where the external and internal Pores are quite stopp'd and choaked up, and the crude Blood stagnated a considerable time, having acquir'd a preternatural Crasis, Disposition, or Quality, immediately suppurates.

According to the great Lord *Verulam*, upon the Subject of Putrefaction.  
 “ And this doth appear more evidently  
 “ in Agues, and come (most of them)  
 “ of Obstructions and penning the Hu-  
 “ mours which thereupon putrefy.” And being incapable of Assimilation to the universal Mass, must be carried off by Urine, Stool, and Transpiration, as is manifest in Agues and putrid Fevers.

And in consumptive Cases, proceeding from a Decay of the Lungs, or any of the noble Parts, it is very common to  
 see



see, during the time Matter is forming, and whilst it is making its Exit, a regular Paroxysm of a <sup>s</sup> Fever, so exactly resembling that of a common Ague; beginning first with a cold shivering <sup>h</sup> Rigour, after that with a hot burning Fit, and when that is gone off, with profuse Sweats. And this is that kind of Fever which is call'd *Putrid*, where the Humours, or part of them, have so little circulatory Motion that they fall into an intestine one, and putrefy.

It is no wonder that scarce any Medicine prevails in these cases, and that the Persons that labour under these Distempers become irrecoverable; because the Vessels are so <sup>i</sup> enervated that their Parietes are not able to resist the Pondus of the Blood, consequently must stag-

<sup>s</sup> Febris à sanguine extra vasa derivato, & corrupto ut in tumoribus, percussionibus, &c. partim ex dolore, partim ex materia, quæ cum sanguine miscetur, &c. Bellini de febr. fol. 413.

<sup>h</sup> Rolsinccius, cap. 60. fol. 205. Rigoris causa à circulatione sanguinis ex parte impeditâ. Zacut. Lucitan. fol. 329. Ex qualibet putredine, rigores, horroresve excitari ubique tradidit Galenus.

<sup>i</sup> -----Tono partis præ nimia distentione tandem penitus everso, inflammatio & Apostema superveniant. Morton de Phthisi, f. 98.



nate, and occasion Imposthumes and Ulcers; and having naturally, by the Laws of Circulation, a constant Supply of Blood flowing to the Parts, to be converted into Matter, and lying in a manner out of the Reach of Medicine, makes it appear very difficult to effect a Cure.

Above all other Medicines, Fumigations have the fairest Chance, because they are convey'd with the Air, and locally apply'd; so that it seems a much more natural, easy and effectual Method, than pectoral Linctus's, Electuaries, Bolus's and Powders; which must undergo great Alteration before they arrive at the Part affected, in order to deterge, incarnate, and cicatrize.

I have of any the greatest Reason to speak in Praise of this Method; for I have had occasion to try the Experiment upon my self, after expectorating the rust-coloured, fætid and purulent Matter, which subsided in Water, if disengaged from the Phlegm which adhered to it. But after some time persisting in this Method of Smoaking, did not expectorate any of the aforementioned Appearances, nor any other (excepting common Phlegm) for eight or nine Days; at which time, with great difficulty, it wou'd be  
pump'd



pump'd up from its Lodgment, always of the same Figure and Size, resembling blue Clay, of a soft and loose Texture: All which induce me to believe that it was an Ulcer, and the last Appearance a Sign of a Cicatrix.

This alone has hitherto had the desir'd Effect: But if the Cause remains, that is, a Decay of the Lungs, so that in time the like, or worse Symptoms appear, which will not be remov'd with<sup>k</sup> this, or the like Medicine; must be contented with the common Fate of Mankind, which must be, sooner or later, to us all.

And here it may not be improper to observe, that when the Blood stagnates *intra vasa*, and acquires acrimonious pungent Qualities, it vellicates the *Vasa*, or solid Parts; so that they (like drown'd Flies revived by the solar Heat) begin to actuate, and recover their Elasticity, and so throw off the morbifick and heterogeneous Matter, before a compleat Suppuration: But if assisted by Art to retain it some time longer, there will

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<sup>k</sup> R. Folior. Tussilag. incis. ℥iiij succin. Thur. Mascul. Mastic. ā ʒj Semin. Coriandr. contus. ℥iiij M. F. pulvis crassus.

appear in the Urine a perfect Concoction.

But when it stagnates *extra vasa*, it is generally retain'd till it comes to a compleat Suppuration: As it hath been many times observed, that in an Empyema, (which proceeds from laudable Blood, stagnated and turned into Matter, perforating the Membrane, and discharged into the Thorax) the purulent Collection hath been evacuated sometimes by Stool, but more commonly by <sup>1</sup>Urine; so that the extravasated Matter is admitted into the Vessels, and by Circulation passed down.

Having gone through my first Proposition, *Transmutation of Blood*; I am come now to give the Ætiology, or an Account of the immediate Cause of putrid Fevers, or Agues; in order to account how the Cortex gives that sudden and wonderful Relief in all intermitting and periodical Diseases.

The Antients divided the Mass of

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<sup>1</sup> Zacut. Lucitan. de Suppuratione Observatio, 109. Scultetus in Armament. Chir. Observ. lib. item. Observ. 46. Fabrit. Hildan. Observ. Skenkius, Felix Wurts in his Surgery, in the Chapter of Wounds in the Breast. And Belloste, Le Chirurgien D' Hôpital.



Blood, into Bilious, Pituitous, Melancholy, and Sanguine; and assign'd the Causes of Fevers to the Predominancy of one or other of the divided Humours in the Body. Some Moderns have likewise divided it into Bilious, Sanguine, and Lymphatick. Others will have it that these two Principles only, *viz.* Lympha and Gall, put into a Heat, and heating the whole Body; and that all Diseases whatsoever owe their Origin to these two Principles, especially the latter of which is the principal Agent: These Divisions must be abolished, and reduc'd to Sanguine only; for we are not to believe that sometimes the Lympha alone, sometimes the Gall, &c. alone can putrefy, by reason of which peculiar Putrefaction, brings on the Fever.

Those that do imagine that the Gall is the principal Agent, and the Cause of most Diseases, it is highly necessary that they should have it carefully and judiciously analysed; that they may be well acquainted with its constituent Principles, (whence proceed different Qualities) and having found out its nature, they will be better able to encounter such a potent Enemy, by applying such Medicines as will qualify those inimical  
Sulphurs,



Sulphurs, or Salts, of whatever kind they are pleased to call them.

We all know that the Gall is discharged into the Duodenum by the Ductus Communis Choledochus, whose Use is to blunt the Acids of the Chyle, and carry it out at the Back-door of the Body ; for this appears from what *Leeuwenhoek* has observ'd, That of the great Quantity of acid Salts he has seen amongst the Aliments in the Stomach, he never could find any in the Chyle after it had pass'd the Duodenum.

To defame this notable Part of the vital Machine, as the Cause of most Diseases, is in some measure to reflect upon the Author and wise Director of Nature : For one might think the Body might have been contriv'd better, than that such an Enemy shou'd be plac'd in so inward a Recess, at liberty to disgorge its Venom into the nutritious Juice. Yet I must confess, without Partiality, that this same Principle is the Cause of great<sup>m</sup> Disorders, by an Obstruction of the ex-

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<sup>m</sup> -----Morbos producit varios, nauseas, anxietates, singultus, cardialgias, vomitus, dolores iliacos, colicos, tormina, diarrhoeas, dysenterias, morbos acutos, febres, convulsiones. H. Boerhaave Instit. fol. 158.



cretory Vessels of the Liver, by being detain'd too long in its Discharge out of the Guts, and if admitted with the Chyle into the Venæ Lactææ, &c. So that if it be detain'd in the Guts, the Consequences are dismal ; yet if any Quantity pass downwards, a Diarrhœa ensues. 'Tis dismal indeed, that whether it stay or go, its morbous Effects are inevitable.

As to the real Causes of Fevers, whether they proceed from an Augmentation, Diminution, or Depravation of the Blood, is not to the purpose, except the latter ; for the two former are accounted for with such Exactness and Accuracy, by the Rules of Mechanism and Laws of Motion, that the Subject is exhausted : And the Author deserves no less than an universal Applause, even of his very Enemies.

The great *Bellini* has laid the *Causa conjuncta* of Intermittents in a Lentor, that does accumulate in the capillary Vessels. And Dr. *Jones's* Book, *De Febribus intermittibus*, and Dr. *Quincy*, in his Translation of *Sanctorius's Medicina Statica*, agree as to the immediate Cause of an intermitting Fever or Ague ; so that an Ague is a Disease from Thickness of Blood stagnating in the capillary Arteries,



Arteries, having acquired new<sup>n</sup> Qualities, is discharg'd into the Mass, there stimulating and vellicating the tender Fibrils, thereby hurry and exagitate the circling Fluid, till the heterogeneous Matter is carried off by Urine, Stool, or Perspiration.

What seems most strange to some, is, that the Matter of every Paroxysm should be generated *de novo*; and that because as soon as every Paroxysm is ended, the very Essence of the Fever ceases for a time, and the Blood returns to an Apyrexia, every new Paroxysm would be a new Fever, which can no way be granted by 'em.

But all this seems very reasonable as long as the antecedent Cause remains, that is, the Relaxation of the Solids, or whatever else retards the Motion of the Blood, to enlarge the Globules, so as to make a Size that will not pass some small Vessels or other, and that stop more; and being thus stagnated, corrupts and gets a peregrine Ferment, and either

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<sup>n</sup> Primrose, de febr. fol. 98. ex Hugon. Senens. Harum verò februm materia putrescebat intra venas, antequam expelleretur. Vid. Primrose, de paroxysmis februm, lib. de vulg. Error. fol. 211.



produce some topical Malady, or excite some disorderly Fermentation in the Blood, in proportion to what stagnates.

So that there is requir'd only a Stagnation of good Blood in the Capillaries to generate a Fever every Day anew: Moreover double or treble Quotidians; as when the same Day two or three Paroxysms invade the Patient successively. In short, all these irregular Paroxysms are occasion'd by different Fermentations, (if I may so call it) being not of the same Date, the Stagnation taking not its Rise from the same time, therefore the partial Concoction must be sooner or later.

Hence it is that altho' the Blood, after every Paroxysm, is entirely brought to rights, yet if the Relaxation of the Solids remains, so that the protruding Force is not equal to the Resistances of the Fluids, there will be a Renewal of the Viscidity, sufficient to bring on another Fit; for Fluids cannot move on, unless the impelling Forces conquer the Resistances. What I have hinted is sufficient in order to proceed with the Cortex.

Dr. *Sydenham* has given us an Account how the Cortex Peruvianus first became famous at *London* for curing Agues, and especially Quartans; and indeed for very good Reason, seeing these Diseases were rarely cured before by any other Method or Medicine, wherefore they were call'd *Opprobria Medicorum*, and were truly a Reproach to Physicians.

It was at that time analytically accounted for by very good Hands, yet being ignorant of the Nature of the Blood, which is the Seat of the Disease, it always operated by an occult Quality. But at this time being partly let into the Secret of the Transmutation of Blood, its Operation will be no longer a Mystery.

It is true indeed, that there is no Remedy known in this Case like the Bark; for it is declared to be extreamly bitter, resinous, viscous, and consequently a most potent Styptick; and in regard all these Qualifications, Figures, Positions, and Principles do so rarely concur in one Body, it is no Wonder not many Barks, Roots, &c. will hardly reach to a Succedaneum; yet being acquainted with the Nature of the Blood, will fur-



nish us with a Guide easy to conduct us to find out some more of the same Class of Medicines that will answer the same Intentions, and equal to *Riverius* his Febrifuge or the Bark.

The *Cortex per se* operates neither by Vomit, Stool, Urine or Sweat, being the usual way of carrying off the Causes of Agues. I judge we may safely conclude, its chief Energy consists only in °stopping Ague Fits; and that by drawing up the Solids to that Tenuity, and straitning the Fibres, hardning the Muscles, and thereby enabling them to retain and digest the Fluid, and preventing the Eruption of the obstructed morbid Matter into Action, till it is come to a perfect Concoction or Supuration: Thereby the Load is extirpated, and the Solids and Fluids *in Equilibrio*.

And this we not only deduce by Reasoning, but can evince by ocular Demonstration: For it plainly appears by the Urine of Intermittents, during

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° Cortex Peruvianus, non tantum ad paroxysmos tollendos, sed & ad diathesin emendandam, causas excitantes frustrandas, & coctionem maturandam, &c. Jones de febr. intermitt.



the Intermission of the <sup>p</sup> febrile Paroxysms, it has a lateritious Sediment, which is a sign of a partial Concoction: And after taking a sufficient Dose of the Cortex, you'll find a light, white and equal Sediment, which always hath been observ'd to signify a perfect Coction of the Humours: And then it is carried off by the aforesaid Sluices or Emunctories, without any Commotion, according to the Aphorism of *Hippocrates*, *Dum pus conficitur, dolores ac febres accidunt: pure autem confecto seduntur*. For as the Alterations in the Texture of a Substance brings a manifest Change in the Qualities, so a Change in the Qualities proves an Alteration in the Texture.

The Nature and Manner of the Operation of this celebrated Drug is not rightly understood; for most, if not all, declare after a doubtful manner. One will have it to be a great Absorbent, and

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<sup>p</sup> In paroxysmis febrilibus urina missa plerunque sanis videtur similis. Nam tunc natura cum peccante materia effervescente pugnat, & nihil ad vesicam segregat; intermittente verò die natura minus à causa morbifica laceffitur, &, postquam victoriam obtinuit, victos humores ad loca excretioni destinata.



withal stiptick, and a potent Astringent, which are Qualities inconsistent at the same time in one Body. Another will have it, that by thinning the Blood, by new bracing up the fibrous System with its Astringency, and by opening insensible Perspiration. And the third, that it is an Alkali; because Alcalies dissolve the Blood, and Acids coagulate it: And for farther Confirmation, imagines that all Bitters (consequently the Cortex, being likewise a Bitter,) do attenuate the viscid Particles, by dissolving the Bond that links 'em, that is the Acid it destroys; for it is supposed that they do consist of a fixt alkaline Salt, and this Salt is *ex diametro* opposite to the Effects of Acids. In short, they will have it that the Cortex keeps the Blood from Coagulation, and renders the Fluids uniform, and has the same Effects on the Fluids as testaceous Pourters have on Vinegar.

But we have the Authority of that noble Philosopher Mr. Boyle, who asserts that there are no lixivial Salts, or urinous, *in rerum naturâ*, unless reduc'd by Putrefaction or Fire; neither of which can be supposed to have broke the Texture of good Bark. For the fix'd Salts

of



of Vegetables, prepared by Calcination, were not naturally pre-existent in that Form, but are produced of the volatile Salts colliquated amongst themselves, and with the earthy Particles, by the Force of the Fire. But it is past all doubt, forasmuch as Experience has confirmed to us, that stiptick Medicaments are the chief Profligators of all intermitting and periodical Diseases.

There are some who will not have the Cortex call'd a febrifuge Medicine, but rather attenuating or aperient, because it is suited to a Disease produc'd by a Lensor or Viscidity. The Implication then is (*expertus loquor*) that it is not stiptick and astringent, for they are jealous very pernicious Effects would ensue.

And altho' it is thought to have those wonderful Effects by its being a powerful Dissolvent, yet do lay to its Charge, that it occasions Obstructions, and Tumours, ill Habits of Body, Dropfies, Suppression of the Menstrua in Women, &c. all which De-obstruents are never charged with; and whenever this happens by using the Cortex, it is occasioned by *Mala Praxis*: For we find that the same Medicine will do Wonders

minium  
termit-  
ntium  
mentum  
ejusdem  
veris.



ders in a thousand Diseases that are periodical, or where the Solids are relax'd, and want a potent Astringent, that will brace the Fibres, preserve the Equilibrium between the Force of the Solids, and the Resistances of the Fluids.

By what has been said, it will be a hard Matter to bring them to assent that the Cortex doth Wonders by accelerating of Putrefaction. And it may be thought unreasonable to induce and accelerate Putrefaction, in order to set the OEconomy to rights, since Putrefaction is the Destruction of a Body: But I mean no other than that which has acquir'd a preternatural Crasis, Disposition or Quality, and is as much excrementitious as the Urine, or *alvi faeces*, as being incapable of being <sup>a</sup> assimilated into the universal Mass.

We have no less a Man than Dr. *Morton*, who tells us, in his *Signa Febris intermittentis diagnostica*, that he observ'd, that when the Urine had a late-

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<sup>a</sup> Fernelius, lib. 4. Pathol. cap. 5. Sed & omnes fatentur sanguinem tam magna interdum mutatione depravat, ut non amplius ad habitum redeat naturalem, nec possit iterum per naturæ concoctionem ad primam humoris bonitatem redire.



ritious Hypostasis, as it is wont to have in intermitting Fevers, tho' in a Colick of the Stomach, or Intestines, Pleurisy, Rheumatism, Scarlet Fever, &c. *China-Chinâ citò semper, & feliciter curare soleo.*

To make it still more clear and conclusive, *Bates's Pulvis Lateralis*, which is *Glans Quercina*, &c. and of the same Class, is recommended in *Iliaca, Colica, Lateris dolore, Flatu, Podagra, &c.* This Medicine cannot be proper in these Cases, unless it is taken when there is a lateritious Sediment, and previous Evacuation, speciflicated to the Case; to diminish the Plethora *ad Vasa*, or what is equal to this, until the Humours have been pretty well spent in Evacuations, (as usual when People have been ill for some time) and the Plethora much lessened; then in either of the aforementioned Cases, a Medicine that has these Qualities will immediately put a Period to the Distemper.

We find that Aloes and Steel it self, though they have an astringent and stiptick Quality, are placed in the Class of De-obstruents: Undoubtedly their Energy is in corroborating, or a Coarctation of the Vasa, or solid Parts to embrace



brace the circling Fluid, thereby gives a greater Momentum to the Blood; and increases the Attrition and Impulses of its Parts one against another, so that the Blood is render'd more fluid.

Although Aloes is such a glutinous, viscous, emplastick, and a potent Astringent externally, yet internally it becomes a Purgative, and it's thought to attenuate and excessively dissolve; but it is much that it should not retain a little of the same Quality, and operate accordingly, when taken into the Body. So is likewise Steel looked upon to have the same Effects, as to attenuate; but it will appear to those who rightly observe all its Actions and Properties, that all chalybeat Preparations that are called *aperitive*, are highly astringent, stiptick, obstructive and binding *per se*. Yet it doth sometime, *per accidens*, prove *de-obstruent*, by crowding Humours, violence of Motion, and a forcible Stream they carry all before them, and so become aperitive.

From hence, I think, we may justly conclude, that all Chalybeat Preparations are hurtful in sanguine Constitutions, even those that are called *aperitive*; for the material Principle of



Steel being Vitriol, which is allowed astringent in the highest Degree, doth strongly confirm what before is asserted.

*Galen* makes Aloes a principal Ingredient of his *Pulvis astringens* : And we find that the learned and worthy Physicians among us prescribe *Tinctura sacra* in old Agues, (that have eluded the Force of the Bark) whose principal Ingredient is Aloes. So when the Efforts of the Constitution are not able to bring the peccant Matter to a head, or throw it off ; then Evacuation by <sup>r</sup> Stool is promoted both to ease the Constitution of the overload, and carry off the Humours that would otherwise be troublesome. And moreover this Medicine

<sup>r</sup> Petrus Monavius, apud Crat. lib. 2. Conf. fol. 417. Si, inquit, in febribus intermittentibus quibuscunque, apparente aliquâ, etiam non perfectâ, in urinis, coctione, Ægro ipso die paroxysmi medicamentum purgans dederis, ita, ut effectum suum ante paroxysmi invasionem compleat (horis scil. quatuor, aut quinque antequam paroxysmum adventurum putas) videbis, febrim post illum paroxysmum non amplius reverti, sed prorsus tolli, quasi incantatione quadam. Probavi jam sæpius, & in pluribus semper eventus respondit.

Vid. Sennert. lib. 2. Pract. f. 106. ex Tralliano & Galeno. Ioustonus lib. 7. fol. 337. Riverius Pr. 1. post. fol. 599. ex Arculani, Gentilis, & Amati Lusitani sententia.



purges off those viscous putrid Humours in a great Part, the Remainder it fixes, (by keeping the Vasa in their State of Contraction) which Properties ought to concur in any Medicine, that deserves to be named a *Febrifuge*, or a *specifick Antipyretick*.

And *intercalato die, Sal. Absynthij* and *Succus Limonum*; these through their mutual Re-action so elaborated, that in this conjunct State have assumed neuter Faculties, not to be apprehended in either singular: It assists greatly in Di- Vitium pri-  
ma coctio-  
nis non cor-  
rigitur in  
secunda,  
nec secunda  
in tertia.gestion, by astringing and hardning the Fibres, and causing an agreeable Sensation on the Stomach; so that our Ali-ments are transmuted in such Manner as is proper for each Digestion: And moreover deterges the Humours in the smallest Vessels, and so fits them for some Evacuation. Thus we find one, two, or three things, though indiffer-ent in themselves, shall, when blend-ed together, produce a valuable Effect.

And Vesicatories to brace the Fibres and wear off those sluggish Humours through the perspirable Orifices: For Fluids grow viscid and stagnate through the decayed Contractions of the Solids, and may therefore then want a Stimulus.



Several have been cured of Agues, by taking *Spir. Sal. Armon.* <sup>s</sup> *Sem. Sinap. Flor. Sulphur, &c.* these by taking off the Lentor or Viscidity of the Blood; although Contraction of the Vessels, and Precipitation of the Humours cure Agues also: And we see Persons frequently cured by Frights, or great Strength of Imagination, upon pretended <sup>t</sup> Amulets, Periapts, Charms, and the like Remedies; which having no Virtue in themselves to produce such an Effect, the same must be referred to some other Cause. Now none hath more Empire than the <sup>v</sup> Imagination over the Humours, wherein almost all Diseases consist. For the nervous System has a peculiar Faculty to exert it self more and more, as often as the *Imperium Voluntatis*,

<sup>s</sup> Hinc fit, quòd vulgus febres putridas aliquando curet assumptione spir. vini, piperis, & seminis sinapi: quæ omnia etsi calori febrili fomentum addere videantur; ventriculum tamen confortant, cruditatesque absument, & sic causam antecedentem tollunt. Hercul. Med. de febr. fol. 331.

<sup>t</sup> Fernel. de abdit. rerum causis, l. 2. c. 16. Abr. Seiler. apud Crat. l. 3. Epist. f. 396. Forest. l. 9. obs. 52. in schol. tot. Horst. oper. Tom. 3. p. 110.

<sup>v</sup> Cicero, Epist. 28. ad Tironem ----- Nunc opus est, te animo valere, ut corpore possis.



the *Fiat* of the Will, sets it upon Motion.

In like manner, the Imagination having Dominion over the Humours, which it moves by Mediation of the nervous System, as Joy, Shame, and Anger bring Blood and Heat into the Face and outward Parts; and Fear and Sadness give them a contrary Motion; it appears that it hath Power to produce Maladies of Intemperies with Matter by the Fluxion or Congestion of the Humours into some Part, and out of their natural Seat. For if the Fancy can disorder the Work of Conformation in any other Body than its own, (as that of an Infant, whose Marks and Defects wherewith he is born are the Effects of the Mother's Fancy) much more may it cause the same Disorder in its own Body, whereunto it is more nearly conjoined. Wherefore, since it can destroy the Temper of the similar Parts and the Harmony of the Organs, it may also cause Diseases, and by the same Means cure them too.

It is manifest how Astringents cure Diseases external as well as internal; and in order to assign a proper Reason for the Use of those Medicines, we may consider in a *Herpes simplex*, Astringents

*Imaginatio  
matris  
morbosae  
formationis  
creat.*



ents cannot contribute to the Cure by promoting Maturation; yet by their constrictive Parts they contract the Vessels, and corrugate the Skin, they do by that Means prevent the farther Influx of Humours, and consequently that already contain'd is the sooner digested and discharged.

Whenever such Separations appear upon the Skin, without any ill Disposition, as *Vitiligo*, *Pruritus*, *Psora*, *Elephantasis*, &c. It is plain that they indicate no farther (being indifferent as to the Health of the Body) than to be destroy'd or removed in the Part. For Internals very often prove tedious and ineffectual; therefore for a speedy easy Cure a local Application.

External Applications or Topicks may not be proper in all Cases, though even at this time-a-Day a great Part of the World, *viz. China* and *Japan*, lay their chief Stress, and Undertaking to Cure almost all Distempers by *Acu-puncture* and *Inustion*. I shall here only instance an *Erysipelas*, and the ill Consequence of applying such things as repel, or drive the Humour from the outward Parts to the inward, and that it must be contrariwise from the Centre to the Circumference,



ference, as *Hippocrates* hath taught us, *lib. 6. Aphor. 25.* in order to remove and make a Cure.

The first Scope consisteth in the right Observation of a good Regimen or Diet. The second concerneth the Aversion of the Humour flowing to the affected Part, which is called *antecedens Materia*. The third consisteth in discharging the Humour which hath flowed already into the diseased Part, which is called *Materia conjuncta*; and that by such Medicines as have a dissolving and breathing Quality.

There are many both Simples and Compounds, rehearsed of *Paulus Aegineta, lib. 4. cap. 21.* and of *Ætius, lib. 14 de re medica*. And *Galen* hath commanded, to sprinkle the Part abundantly with hot Water: By this we are to understand that it is always good when any internal noxious Humours break out, that they may be evacuated by Perspiration or Suppuration; for if external Humours strike in, they may injure some or other of the principal Viscera, and endanger the animal Functions.

That excellent practical Physician Dr. *Sydenham* prescribes an emollient, discutient and diaphoretick Fomentation,  
in



in order to give vent and discuss the impacted Matter. And since that judicious Physician treated this acute Disease with Phlebotomy and purging premised; undoubtedly we may with a great deal of Safety make use of Externals in Diseases of the Skin which are chronical, and they easily yield to, and vanish.

I have this only to add, and that is, an experienced Remedy in a Vitiligo, or Morpew, a Distemper so common, and it is this,

℞ Sapon. Alb. ℥j.  
 Sulph. Viv. ℥ss.  
 Virid. Æris ℥ss.  
 ol. Tartar. deliq. q. f.  
 M F. Globulus. —

Moisten it in a little Vinegar, and rub the Part affected with it at going to rest, till some adheres to the Part; the Morning following to wash it off with warm Water, and this repeated once or twice will compleat a Cure. Yet do not think it amiss to make use of Internals, (though this alone seldom or never fails) such as *Æthiops mineral*, or the like, to deterge the cutaneous excretory Ducts for fear of a Relapse.

This



This naturally leads me to say something concerning pustulous Eruptions, especially those of the Small-Pox, (a Distemper so unaccountable to most Physicians) the Seminium of which is thought to lodge in the Blood of such as never had them ; and of such peculiar Nature it is, that few are twice attack'd with it. But whether it is an endemick Disease that is impressed by a particular Constitution or Intemperature of the Air, or whether it proceeds from a latent Cause lodged in the primogenial Temperament, which Nature doth cast forth into those virulent Pustules ; I shall not determine.

However it is a received Opinion, importing that those that are inoculated for the said Distemper, are never after surprized with it. But as to the Manner how it is produced by Inoculation ; the Reason is obvious, and contained in this Maxim, *Pus generat Pus*, Matter begets Matter.

I have in the foregoing Sheets demonstrated how the Blood of its self innoxious is changed into Matter : And it is certain in this Operation, that the malignant Particles being diffused through the Mass, and thus communicated from

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with-



without, doth nevertheless render it prolific ; being convey'd (by the Laws of Circulation) to the secretory Ducts, especially the cutaneous, by reason of the great Discharge of Humours by Perspiration, there forming Pustules by coagulating the Blood coming thither or passing that Way, according to the Texture of its Parts. But how certain or how advantageous this may be in preventing the like Distemper from any other Cause, I shall leave it to the Observations and Reasoning of others.

The Putrefaction of the Body of Man (as in Agues, Consumptions of the Lungs, Imposthumes, and Ulcers both inwards and outwards) is owing to a want of a due Circulation ; and all Tumours, Pustules, and Discolourations are occasioned by Blood stagnating in the Hollow of the Fibres, which becomes gross and thick, is incapable of passing into the capillar Veins, yet notwithstanding the Pulsation of the Arteries propelling it forward, must necessarily then elevate the Blood stagnating in the Fibres into a Tumour, Pustule, or Discolouration, according to the Proportion of what doth stagnate.



In acute Diseases that proceed from a Suppression of some Secretion, there will be a *Plethora morbosa*, which is the *Causa antecedens proxima*; so that when we find Nature thus embarrassed, and cannot be rid of this Load by its usual secretory Ducts; we must endeavour by a regular Procedure to nip them in the Bud; by diminishing and taking off the *Plethora*; for it is plain, that the Quantity drawn off, if it be in time, does the Business, by restoring again the *Equilibrium*, between the Solids and the Fluids.

In Case this should be omitted thro' Neglect, we must endeavour to prepare the Humours that stagnate in order to correspond with the Orifices of the excretory Vessels; that the Humours which cannot be assimilated into homogeneous Qualities, might be thrown out of the Course of Circulation by the natural Discharges, by Transpiration, or by Abscesses; and the animal Fluids restored to their natural State.

For if the glutinous and viscid Humours cannot be alter'd and concocted into a due Magnitude or Smallness, as that they may be carried by the Laws of Circulation through the Channels of Excretion.



Excretion, they must either stagnate in the capillary Vessels, or there will be a Metastasis at least into the cutaneous Glands, and capillary Vessels ; and being there retained are either formed into Abscesses, or taken off by some Hemorrhage ; and this is what we call *Crisis*.

A Crisis is commonly defin'd a Mutation of a Disease either to Health or Death, for better or for worse, or the Change of one Disease into another. The Term through which it passes is the Space of Time employed by Nature in the Coction, Separation and Excretion of the peccant Humors. The Agent or Motor is Nature, which must be assisted in imperfect Crisis, not in such as are perfectly made. No laudable Crisis happening without Concoction precedent, which holds good not only in continual Fevers, but also after the Fits or Accessions of intermitting ones : Lastly, we must consider what is moved, namely, the Humors; for Crisis hath place only in humoral Diseases.

Hipp. Sect.  
I. Aphor.  
XX.

*Crisis morbi est coctio materiae morbificae & humoris excernendi.*







